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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,306	09/25/2006	David Becker	2004P00791WOUS	1780
28159 7590 12/09/2011 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 Briarcliff Manor, NY 10510-8001				
EXAMINER GUPTA, VANI				
ART UNIT 3777		PAPER NUMBER		
NOTIFICATION DATE 12/09/2011		DELIVERY MODE ELECTRONIC		

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/599,306  
Filing Date: September 25, 2006  
Appellant(s): BECKER ET AL.

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W. Brinton Yorks, Jr.  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed September 26, 2011 appealing from the Office action mailed April 28, 2011.

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

Claims 1-2 and 4-20 now stand finally rejected by an Office action mailed on April 28, 2011. The claims being appealed are Claims 1-2 and 4-20. This is as indicated by Appellant in the Appeal Brief.

**(4) Status of Amendments After Final**

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except

for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

**(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

**(8) Evidence Relied Upon**

US 5,178,150	Silverstein et al.	01-1993
US 4,007,735	Magnusson	02-1977
US 6,315,710	Bushek et al.	11-03

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 1. Claims 1, 2, 4 – 10, and 17 – 20 are rejected under 35 U.S.C. 103(b) as being unpatentable over Silverstein et al. (US 5,178,150) in view of Magnusson (US 4,007,735).***

**Regarding Claims 1 and 2**, Silverstein et al. (hereinafter Silverstein) discloses an ultrasonic intracavity probe (**fig. 1**) for scanning a volumetric region from within the body comprising:

a handle section (**36**) to be held during the use of the probe (*col. 4, ll. 58 – 60*);  
a shaft section (**32**) having a distal end (**12, 14, 34**), which is to be inserted into a body cavity during use of the probe (*col. 2, ll. 57, and 66 – 67; col. 4, ll. 40 and 47*) and  
a transducer disposed at the distal end (**fig. 2, 52**), wherein an array ultrasound transducer, when rotated (*col. 4, ll. 55 – 58*) is capable of producing three-dimensional or volumetric images (*col. 4, ll. 61 – 66*) as is known in the ordinary of art.

More specifically, Silverstein also discloses that the transducer is pivotally movably mounted (“rotationally,” “linearly,” *etc.* – *col. 4, ll. 55 – 58*) within the fluid chamber/balloon (**flexible bag, 62**).

**Figures 2 - 4** depict an arrangement of the transducer within the fluid-chamber-balloon combination. The liquid bath or acoustic coupling fluid (**64**) is within the fluid-chamber-flexible-bag located at the distal end of the shaft (*col. 3, lines 14- 16*) and therefore, is constrained to the shaft section to the exclusion of the handle section. According to **figs. 2 - 4**, a portion of the coupling fluid is located between the array transducer and the distal end of the shaft during scanning.

The pivotally mounted array transducer (**52**) is located also in a rigidly dimensioned compartment at the distal end of the shaft section (**fig. 4, (50) and (70)**), wherein the transducer body (**50**) and curved portion (**70**) make up the rigidly dimensioned compartment. As shown in **fig. 4**, the compartment is located at the distal end.

A motor comprising several parts is located in the handle section (*col. 6, line 59 – col. 7, line 13*) and is connected or coupled to the array transducer by a drive mechanism (“*actuating rod*,” *col. 6, line 35 – 58*) that moves or pivots or rotates the array transducer during scanning (*col. 6, line 35 - col. 7, line 38*).

The liquid bath, or “acoustic coupling fluid,” **(64)** is contained within the area of the compartment and surrounds the transducer and the compartment. That is, at least a portion of the liquid bath is located between the array transducer and the distal end of the shaft during scanning (*col. 5, ll. 49 – 63*).

While Silverstein differs from Claim 1 in that Silverstein does not specifically suggest that the center of gravity of the probe is located in the handle section, it would have been obvious and well within the realm of ordinary skill in the art to provide the center of gravity, or the balance point, or most of the weight, at the handle portion for ease of use and/or optimal treatment results. As *Magnusson* explains, the center gravity of Magnusson’s suggested medical probe is located at the handle section of the probe, where the motor is located, so that the generated energy is transmitted evenly through the shaft of the medical probe and provides optimal treatment results; and also so that the handling of the medical probe by the user is optimal (*col. 2, ll. 19 – 23; and col. 3, ll. 36 – 63*). Additionally, as it would be known in the art that center of gravity of the probe would be predicated by the dimensions, materials, position, size, and weight of the components and the probe as a whole, modifying Silverstein to obtain a center of gravity in the handle would involve only routine skill in the art. For example, this would entail mere arrangement of parts, which does not receive any patentable weight because it

would not produce any unexpected results. See *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

**Regarding claims 4 – 10**, Appellant should note that providing the transducer mount assembly having a proximal termination within one and one-half of the distal end of the shaft section; or providing a liquid bath wherein 90% of the liquid bath is contained within the transducer mount assembly; or providing a liquid bath wherein the liquid bath has a volume of “less than 25 cc of liquid,” or “less than 10 cc of liquid,” or “approximately 6 cc of liquid;” or providing a liquid bath wherein 90% of the liquid bath in the most distal 25% of the length of the shaft section involves only rearrangement of parts and does not receive any patentable weight since Appellant has not explained how the transducer mount assembly would perform differently or better than the prior art of record. Nonetheless, it would be obvious to one skilled in the art to provide on or more of the aforementioned arrangements so that one could provide optimal (smaller) size of the device for patient comfort; provide optimal deliverance of energy; and provide optimal acoustic coupling and impedance matching by the liquid, as suggested by Silverstein (*col. 2, line 55 – col. 3, line 8*).

**Regarding Claims 17 – 19**, Appellant should note that providing a probe with weight less than 400 grams, or less than 300 grams, or approximately 250 grams involves only routine skill in the art such as rescaling or changing size or proportion and does not establish patentability over prior art. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976).

**Regarding claim 20**, Silverstein suggests that components of the shaft of the intracavity probe are made with materials at least equal to the density of the stainless steel components of the drive mechanism (*col. 5, ll. 55 – 58*).

**2. *Claims 11 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverstein and Magnusson as applied to Claim 1 above, further in view of Bushek et al. (US 6,315,710).***

*Regarding claims 11 – 16, Silverstein in view of Magnusson suggests a transducer mount assembly, wherein the transducer array (52) is mounted to a transducer mount assembly having a main body and located in the distal end of the shaft section, which extends from the handle such that the transducer array is free to rotate or pivot about the axis of transducer region (figs. 2 and 4, 50, 54, 58, 80; col. 6, ll. 35 – 58).*

Silverstein in view of Magnusson does not disclose specifically that the main body of the transducer mount assembly is formed of material lighter than stainless steel.

However, Bushek et al. teaches a hearing device, insertable into a cavity such as a ear, comprising a transducer mount assembly (*fig. 11, 220*) formed from a material other than stainless steel such as polycarbonate, silicone, titanium, etc. (*col. 13, lines 60 – 67*). Bushek et al. also teaches a mount assembly that allows the rotation and delicate positioning of the transducer (*col. 13, lines 31 – 35 and 52 – 59*).

Accordingly, it would have been obvious to one of ordinary skill in the art, having the teachings of Silverstein and Magnusson, and Bushek before one at the time the invention was made, to modify the ultrasonic probe teachings of Silverstein and Magnusson with transducer assembly materials teachings of Bushek so that one could provide optimal positioning of the transducer mount assembly.

*With further respect to Claim 12, Silverstein suggests in Fig. 4 that transducer mount assembly portion (50) provides a transducer cradle, which supports transducer array (52).*



*With further respect to claims 13 and 14*, transducer cradle includes a solid body (70) located behind array transducer which displaces volume of coupling fluid; it is shaped so that it passes more easily through the liquid bath (*Fig. 4*).

*With further respect to claims 15 and 16*, Silverstein teaches that the transducer mount assembly includes wear surfaces (*Fig. 4, #80, 120, 122*), wherein wear surfaces are part of the drive mechanism (*col. 6, ll. 40 – 45; and col. 7, ll. 22 – 25*); and teaches that the transducer mount assembly may be formed of materials such as stainless steel (*col. 7, ll. 3 and 20*).

#### **(10) Response to Argument**

##### ***I. In response to Applicant's arguments that the Silverstein et al. and Magnusson combination fails to teach the "rigidly dimensioned compartment" limitation:***

In response to Appellant's arguments on p. 8, Examiner disagrees with Applicant's interpretation/assertion that the prior transducer is "on" the rigid compartment. On the contrary, Silverstein's rigid compartment is shaped as cavity *IN* which the transducer sits. The liquid surrounds the entire area, including the space *WITHIN* the cavity *IN* which the transducer (52) sits, and the area surrounding the transducer body (*fig. 4, (50) and (70)*)). In any case, the claims do not state that the liquid is supposed to be *IN* the transducer body (or in the "rigidly" dimensioned compartment), only that it is constrained to the shaft section to the exclusion of the handle section (i.e. situated in the distal section.) Silverstein provides this.

The transducer body (50) and curved portion (70) make up the rigidly dimensioned compartment. As shown in *fig. 4*, the compartment is located at the distal end. Examiner disagrees with Applicant's assessment that the bag's ability to elongate precludes the teachings of

this rigidly dimensioned compartment. As indicated in the latest office action and advisory action, in addition to the compliant bag (62) to which the Appellant refers to and which has never been referred to as the rigidly dimensioned compartment, there are components that DO make up the rigidly dimensioned compartment. If the Appellant carefully reads the aforementioned rejection and responses above, Appellant will see that the rigidly dimensioned component is referred to as component (50). Please see *figs. 2 and 4*, and the above rejection for more details.

***II. The Silverstein et al. and Magnusson combination fails to teach the “array transducer” limitation.***

In response to Appellant’s arguments, Examiner points out respectfully, as explained already in the Advisory Action, Appellant has not claimed any specifics with respect to an “array transducer.” That is, the Appellant has not specified the dimensions or the array, whether it is phased, etc. As would be understood by one of ordinary skill in the art, an array transducer could comprise an array of any dimension fitting within x-by-x arrangement, such as a one-dimensional (1x1), two-dimensional (2x2), etc. Therefore, the claim feature in question may encompass a transducer with an array as small as one-dimension (1x1) to as big as hundred-dimension (100x100). Prior art reads on an array with at least 1-dimension (1x1).

**III. In response to Appellant’s arguments that the Silverstein et al. and Magnusson combination fails to teach the “pivotally mounted” limitation in the array transducer or any other device:**

In response to Appellant’s arguments on p. 9, Examiner disagrees respectfully with Appellant’s assessment that the cited passage does not suggest a pivotally mounted transducer

but instead discusses manually changing the viewing position of the transducer. Examiner respectfully disagrees and points out that the probe tip, where the transducer resides, is rotated by an actuator (**14**), which resides at the proximal end of the catheter (*figs. 2 and 4*). The transducer, therefore, is mounted in the probe tip in such a way that it may pivot, even if via the actuator. Appellant should note that the mechanics of the ability to pivot is not being claimed; i.e., whether the transducer pivots manually or automatically. Furthermore, the actuator comprises a helical spring (**56**) with which the transducer is connected (col. 4, ll. 55 – 58 and col. 5, ll. 51 – 55).

Furthermore, in response to Appellant's arguments about the feature "sweeping an image plane in front of the probe" or "forward-looking" this feature is not actually claimed and therefore was not considered during the examination of the claims. Examiner respectfully points out that with respect to the features that are **NOT** recited in the rejected claim(s); although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

#### **IV. The combination of Magnusson with Silverstein et al. is improper.**

In response to applicant's argument that US Pat. 4,007,735 (Magnusson) is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Magnusson provides a medical-based intracavity handheld probe that provides teachings for the need to place the center

of gravity in the handle section of the probe. Applicant should also note that “in a simple mechanical invention a broad spectrum of prior art must be explored and it is reasonable to permit inquiry into other areas where one of ordinary skill in the art would be aware that similar problems exist.” See also *In re Bigio*, 381 F.3d 1320, 1325-26, 72 USPQ2d 1209, 1211-12 (Fed. Cir. 2004)

Furthermore, the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known **at the time of the invention**, and on what such a person would have **reasonably expected to have been able to do in view of that knowledge**. This is so regardless of whether the source of that knowledge and ability was **documentary prior art, general knowledge in the art, or common sense**.” – MPEP 2141 (section II last paragraph). In view of common sense, “**A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton.**” KSR, 550 U.S. at \_\_\_, 82 USPQ2d at 1397. “[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* Office personnel may also take into account “the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at \_\_\_, 82 USPQ2d at 1396. In addition to the factors above, Office personnel may rely on their own technical expertise to describe the knowledge and skills of a person of ordinary skill in the art. The Federal Circuit has stated that examiners and administrative patent judges on the Board are “persons of scientific competence in the fields in which they work” and that their findings are “informed by their scientific knowledge, as to the meaning of prior art references to persons of ordinary skill in the art.” *In re Berg*, 320 F.3d 1310, 1315, 65 USPQ2d 2003, 2007 (Fed. Cir. 2003).

***In response to Applicant's attached declaration:***

The Declaration under 37 CFR 1.132 filed September 26, 2011 with the Appeal Brief is insufficient to overcome the rejection of claims 1, 2, and 4 – 20 based upon the rejection as set forth in the last Office action because: the statements only refer to the intended use or purpose of the Magnusson reference and present invention, and does nothing to address the combined teachings of Silverstein and Magnusson that suggest the *obvious* need to provide the center of gravity at the handle portion of the handheld probe. Applicant should note that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the *combination* of the prior art teachings suggest that they are capable of performing the intended use, then they meet the claim. Applicant should also note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

***V. In response to Appellant's arguments as to whether Claims 11-16 were improperly rejected under 35 U.S.C. §103(a) as unpatentable over Silverstein et al. and Magnusson as applied to Claim 1, and further in view of US Pat. 6,315, 710 (Bushek et al).***

In response to Appellant's arguments on p. 11 with respect to Bushek et al., as stated above, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Please see above rejections and responses for Pancetti and Parce's suggestions or teachings of features in question.

In response to providing a tapered end, Appellant should note that this feature has not been claimed; and with respect to unclaimed features, please refer to above responses and/or rejections.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Vani Gupta/

Examiner, Art Unit 3777

Conferees:

/Tse Chen/

Supervisory Patent Examiner, Art Unit 3777

/THOMAS J SWEET/

Supervisory Patent Examiner, Art Unit 3738